

Remarks

Claims 1-5, 7 and 8 are pending in the application. Claim 2 has been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1, 3-5 and 7 have been rejected under 35 U.S.C. § 103(a) as being obvious over Collet-Billon in view of Zulauf. In view of the following remarks, reconsideration and withdrawal of these grounds of rejection is requested.

Examiner Interview

Applicant thanks the Examiner for the courtesy of the telephonic Interview conducted on July 9, 2003. During the Interview, Applicant's representative and the Examiner discussed the present rejections under Collet-Billon and Zulauf, and possible claim amendments to overcome said rejections. The Examiner suggested that possibly the 'interactivity' of the present invention should be highlighted in the claims. Accordingly, independent claim 1 has been amended to specifically recite the fact that the "portions of [a] digital image" are transmitted to a remote diagnostic workstation in response to manipulation of a probe at the diagnostic workstation. Additionally, independent claim 1 has also been amended to specify the 'videoconference' ability as suggested by the Examiner during the Interview. Accordingly, Applicant believes the present application is now in condition for allowance.

Objections

Claim 2 is objected to due to a misspelling of the word "plane." Applicant has amended claim 2 to correct this misspelling, and thus reconsideration and withdrawal of this objection is respectfully requested.

§ 112 Rejections

Claim 2 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Examiner points out that the term “said workstation” in claim 2 has no antecedent basis. Applicant has amended claim 2 so that it is clear that the “acquisition” workstation is being referenced. Therefore, reconsideration and withdrawal of this ground of rejection is respectfully requested.

§ 103 Rejections

Claims 1, 3-5 and 7 stand rejected under 35 U.S.C. § 103(a) as being obvious over Collet-Billon et al. (U.S. Pat. No. 5,540,229) in view of Zulauf (U.S. Pat. No. 5,482,043). For the reasons set forth below, reconsideration and withdrawal of this ground of rejection is respectfully requested.

An exemplary embodiment of the present invention comprises a workstation 1 including a display 2, a central (processing) unit 3, a high definition digitalization card 4, videoconference means 5, three-dimensional position sensor 6, and an echographic probe 7. The workstation 1 is coupled to a communication network 8 for communicating with an expert at a remotely located diagnostic station (not shown).

In operation, the echographic probe 7 measures a sectional plane of a three-dimensional subject (e.g., patient) and generates a digital image therefrom. The three-dimensional position sensor 6 determines the position of the probe 7 with respect to the subject. The communication network 8 provides a mechanism for providing portions of the digital image (e.g., two dimensional sections) to an expert at the remotely located diagnostic station for analysis in response to the expert's manipulation of a probe. The videoconference means 5 provides a mechanism for the expert to provide a real-time diagnosis to the patient.

Collet-Billon et al. teaches, in one exemplary embodiment, a system and method for viewing three-dimensional echographic data in the absence of a patient which includes a workstation 14 with a central processing unit 15, a monitor 16 and a memory 18 (see, col. 5, line 65 – col. 6, line 1). The memory 18 includes echographic data on a subject or subjects addressed in coordinate form (see, col. 6, lines 1-5). The workstation 14 is coupled to a three-dimensional sensor 22 and an emitter 23 which are used to determine the position of a sectional plane of a dummy 26 and display the corresponding data stored in the memory 18 on the monitor 16 (see col. 6, lines 18-58). In the embodiment shown in Figure 3, a three-dimensional (echographic) probe 33 is included within the system for generating echographic data which may later be viewed using the above-described system. As discussed in Abstract and Description of the Related Art sections of Collet-Billon, the system is intended to be used a learning aid for simulations and training, and not as a actual echographic imaging device usable on live patients (emphasis added).

Claim 1 recites:

An imaging system comprising: an acquisition workstation comprising: means for acquiring an echographic image and generating a digital image formed by a three-dimensional matrix from echographic sectional planes of said echographic image; means for transmitting portions of said digital image to a diagnostic workstation in response to manipulation of a probe disposed at the diagnostic workstation, said diagnostic workstation disposed remotely from said subject; said diagnostic workstation comprising: said probe and means for referencing positions on a dummy; echographic display means connected to the means for referencing positions; means for performing a virtual echographic examination of said digital image with said probe to select any two-dimensional sectional plan from said digital image; means for expert assessment including a module for permitting the transfer of audio and visual content between the acquisition workstation and the diagnostic station; and means for transmitting control data between said acquisition workstation and said diagnostic workstation, said control data allowing a user to select, on each workstation, a sectional plan to be visualized. [emphasis added].

Thus, claim 1 requires an imaging system including “means for transmitting portions of [a] digital image” to a remote diagnostic workstation in response to manipulation of probe disposed at the diagnostic workstation. Claim 1 also requires a “means for expert assessment” including a “module for permitting the transfer of audio and visual content between the acquisition workstation and the diagnostic workstation” (e.g., videoconference ability).

Collet-Billon fails to disclose or suggest “means for transmitting portions of [a] digital image” to a remote workstation in response to manipulation of a probe at the remote workstation. In fact, Collet-Billon fails to disclose a remote workstation as recited in claim 1.

Collet-Billon discloses only one workstation (14 in Fig. 2, 34 in Fig. 3) which is disposed in the same location as the dummy 26, 56. Figure 3 of Collet-Billon teaches a host ultrasonic echograph 31 which the Examiner contends is an additional ‘workstation’, however, the host ultrasonic echograph 31 is disposed in the same location as the workstation 34 (and coupled thereto by bus 43) and the dummy 56. Moreover, manipulation of the echographic probe 33 disposed at the echograph 31 does not operate to transmit “portions” of any digital images created thereby to the workstation 34. Since it is clear that Collet-Billon does not disclose or suggest a remotely located “diagnostic workstation” or a “means for transmitting portions of [a] digital image” thereto in response to manipulation of a probe at the diagnostic workstation, reconsideration and withdrawal of this ground of rejection with respect to claims 1, 3-5 and 7 is respectfully requested.

Zulauf also fails to disclose or suggest the invention as recited in claim 1. Zulauf teaches a method and apparatus for telefluoroscopy including a fluoroscope 10, an ultrasonographic imaging device 15, a transmitting apparatus 75, a receiving apparatus 77, and a telecommunications circuit 6. Ultrasound images from the ultrasonographic imaging device 15 may be transmitted to a remote radiologist through the telecommunications circuit 6 and viewed

on a video monitor 70. Voice communications between the operator of the ultrasonographic imaging device 15 and the radiologist take place over a standard telephone line (see, col. 7, lines 1-14).

Zulauf does not disclose or suggest “means for expert assessment” including a “module for permitting the transfer of audio and visual content between the acquisition workstation and the diagnostic station” as recited in claim 1. The Zulauf system for transmitting ultrasound or telefluoroscopic images while a radiologist and operator are in contact on the telephone at the same time is vastly different from the claimed system in which a remotely located expert views portions of echographic images and provides a diagnosis to the patient’s location over a videoconference module.

Zulauf certainly does not disclose or suggest a “means for expert assessment” including a videoconference module whereby an expert provides a real-time diagnosis to a patient from a remote location. All Zulauf discloses is a telecommunications circuit 6 (e.g., telephone line) for transmitting ultrasound or telefluoroscopic images to a remote location. If a radiologist is not on the telephone 85 when the images are sent, the ultrasound operator and the radiologist can have no meaningful discussion in real-time. Even, if the radiologist is on the telephone 85, the radiologist does not have the ability to view the ultrasound operator, or send images or video back to the operator (such as he would have in a standard “videoconference”). Accordingly, reconsideration and withdrawal of this ground of rejection with respect to claims 1, 3-5 and 7 is respectfully requested.

To establish a prima facie case of obviousness, there must be some teaching, suggestion or motivation in the prior art to make the specific change made by the applicant. In re Dance, 160 F.3d 1339, 1343 (Fed. Cir. 1998). Obviousness should be measured “at the time the invention was made” (i.e. the filing date of the application), and with no prior knowledge of the

applicant's disclosure. In re Dembiczak, 175 F.3d 994, 998-999 (Fed. Cir. 1999).

Obviousness cannot be established by hindsight combination to produce the claimed invention. In re Dance, 160 F.3d. at 1343. The Examiner must show reasons why the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the prior art references for combination in the manner claimed. In re Rouffet, 149 F.3d 1350, 1357 (Fed. Cir. 1998).

As noted above, the Examiner has failed to point out some teaching or suggestion in the prior art that would lead one of ordinary skill to create a echographic system which includes an "acquisition" workstation and remotely disposed "diagnostic" workstation including videoconference capability, such that an expert disposed at the "diagnostic" workstation may examine and assess a subject disposed at the "acquisition" workstation. Thus, for these additional reasons, reconsideration and withdrawal of this ground of rejection with respect to claims 1, 3-5 and 7 is respectfully requested.

Claims 2 and 8 stand rejected under 35 U.S.C. § 103(a) as being obvious over Collet-Billon et al. in view of Zulauf, and further in view of Wofford (U.S. Pat. No. 5,542,003). For the reasons set forth below, reconsideration and withdrawal of this ground of rejection is respectfully requested.

As discussed above, Collet-Billon and Zulauf fail to disclose or suggest, whether taken alone or in combination, the invention recited in independent claim 1. Since claims 2 and 8 are both dependent upon claim 1, reconsideration and withdrawal of this ground of rejection is respectfully requested for at least those reasons referenced above with respect to claim 1.

Summary

In view of the foregoing remarks, Applicants submit that this application is in condition for allowance at an early date, which action is earnestly solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'T. Daniel Christenbury', with a long horizontal flourish extending to the right.

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